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NL-13-150

December 5, 2013

U.S. Nuclear Regulatory Commission
Document Control Desk
11545 Rockville Pike, TWFN-2 F1
Rockville, MD 20852-2738

SUBJECT: Licensee Event Report # 2013-006-00, "Technical Specification Prohibited Condition Due to an Inoperable 33 Station Battery Caused by a Cell Crack "
Indian Point Unit No. 3
Docket No. 50-286
DPR-64

Dear Sir or Madam:

Pursuant to 10 CFR 50.73(a)(1), Entergy Nuclear Operations Inc. (ENO) hereby provides Licensee Event Report (LER) 2013-006-00. The attached LER identifies an event where there was a Technical Specification prohibited condition for an inoperable station battery 33, which is reportable under 10 CFR 50.73(a)(2)(i)(B). This condition was recorded in the Entergy Corrective Action Program as Condition Report CR-IP3-2013-04216.

There are no new commitments identified in this letter. Should you have any questions regarding this submittal, please contact Mr. Robert Walpole, Manager, Licensing at (914) 254-6710.

Sincerely,

A handwritten signature in dark ink, appearing to be "JAV/cbr", written in a cursive style.

JAV/cbr

cc: Mr. William Dean, Regional Administrator, NRC Region I
NRC Resident Inspector's Office, Indian Point 3
Ms. Bridget Frymire, New York State Public Service Commission
LEREvents@INPO.org

IE22
NRR

LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME: INDIAN POINT 3

2. DOCKET NUMBER
05000-2863. PAGE
1 OF 4

4. TITLE: Technical Specification Prohibited Condition Due to an Inoperable 33 Station Battery Caused by a Cell Crack

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV. NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	09	2013	2013	006 - 00		12	09	2013	FACILITY NAME	DOCKET NUMBER
										05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
1	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER	
NAME Robin Daley, System Engineer, System Engineering Electrical	TELEPHONE NUMBER (Include Area Code) (914) 254-6817

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	EJ	BTRY	C173	Y					

14. SUPPLEMENTAL REPORT EXPECTED		15. EXPECTED SUBMISSION DATE		
<input checked="" type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)	<input type="checkbox"/> NO	MONTH	DAY	YEAR
		02	28	2014

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced type written lines)

On October 9, 2013, during performance of weekly surveillance test 3-PT-W013 (Station Battery Visual Inspection) on station battery 33, a crack was discovered in the battery jar of cell 14 which extended below the high level fluid line. The 33 battery is required to be operable per Technical specification 3.8.4 (DC Sources - Operating) in Modes 1-4. The 33 battery was declared inoperable after its ability to perform its design function in a seismic event was questioned due to possible crack propagation. An emergency temporary modification was installed on October 9, 2013, restoring operability. On October 17, 2013, cell 14 on the 33 battery was replaced. The direct cause of the crack in cell 14 was corrosion of the positive battery post seal area which caused the post to expand creating excessive strain on the lid of the battery jar. The most probable cause was chemically induced degradation which weakened the jar wall allowing the stress being transferred from the cover crack to physically separate the jar. An immediate corrective action was to prepare an emergency temporary modification and install the modification to restore the battery operable. Corrective actions included replacing cell 14 of the 33 battery. A failure analysis is being performed by an independent vendor. The event had no significant effect on public health and safety.

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Note: The Energy Industry Identification System Codes are identified within the brackets {}.

DESCRIPTION OF EVENT

On October 9, 2013, while at 100% reactor power, during performance of weekly surveillance test 3-PT-W013 (Station Battery Visual Inspection) on station battery 33 {EJ}, a crack was discovered in the battery jar of cell 14 which extended below the high level fluid line. The 33 battery is required to be operable per Technical Specification (TS) 3.8.4 (DC Sources - Operating) in Modes 1-4. On October 9, 2013, at approximately 12:20 hours, the 33 battery was declared inoperable after its ability to perform its design function in a seismic event was questioned due to possible crack propagation. TS 3.8.4 Condition B was entered and an emergency temporary modification was initiated. The allowed completion time for Condition B (one DC electrical power subsystem inoperable) is 2 hours. A temporary modification was prepared and installed and the battery restored to operable on October 9, 2013, at approximately 13:45 hours. On October 17, 2013, at approximately 08:38 hours, TS 3.8.4 Condition B was entered for replacement of cell 14 on the 33 battery. On October 17, 2013, at approximately 10:17 hours, TS 3.8.4 Condition B was exited after successful replacement of cell 14 and post maintenance testing of the 33 battery. The condition was recorded in the Indian Point Energy Center (IPEC) Corrective Action Program (CAP) as Condition Report CR-IP3-2013-04216.

The station DC electrical power system {EJ} provides the AC emergency power system with control power and also provides both motive and control power to selected safety related equipment and preferred 120 volt AC vital instrument bus power. The 125 volt DC electrical power system consists of four independent safety related DC electrical power subsystems (31, 32, 33, and 34). Each subsystem consists of one 125 volt DC battery {BTRY} and associated battery charger (BC) {BYC} and an installed spare battery charger BC-35 that can be used as the associated BC for any one of the batteries. During normal operation, the 125 volt DC load is powered from the BCs with the batteries floating on the system. In case of loss of normal power to the BC, the DC load is automatically powered from the station batteries. Each of the four station batteries is sized to carry its expected shutdown loads for a period of 2 hours. The 33 Station Battery is a Class 1E battery comprised of 60 individual KCR-13 cells manufactured by C&D Technologies {C173}. The 33 battery KCR-13 Lead-Acid cell is specifically chosen for supporting the load profile calculated for the DC loads on the 33 DC Power Panel during a loss of the normal battery charger AC supply.

The Class 1E (nuclear safety-related) battery cells are constructed of a polycarbonate outer jar, with a PVC lid epoxied to the top. The internal plates are filled with lead-paste composition and the positive and negative posts exit through seals in the lid. The battery is filled with an acid electrolyte, which creates the necessary electrochemical reaction between the plates for the battery to function. The cells of the 33 battery were installed in 2005 replacing the original battery. The 33 battery is located in the Emergency Diesel Generator {EK} bunker {NB} in a cabinet which is seismically mounted to the bunker wall. In 2010 CR-IP3-2010-03295 recorded that some station batteries manufactured by C&D Technologies were developing hairline cracks in the PVC lids of many of the cells. The battery manufacturer concluded the most likely cause of the cracks was due to battery post growth caused by corrosion at the post seals. During the corrosion process the growth of the positive or negative posts would cause mechanical stresses along the post seal area, causing the lid to crack along the knit lines, which are the areas where molten plastic meets during the molding process.

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The battery vendor noted that the battery jar cover did not offer any physical support to the internal plates or posts, therefore the degradation of the cover did not compromise the ability of the battery to perform its function. At that time the battery vendor had not been notified of any instances of the cracks propagating from the cover to the jar itself, and they did not believe that a Class 1E jar failure could happen as a result of a crack in the lid due to the nature of the bond between the cover and the jar and because the jar was made of polycarbonate material which is much stronger than the PVC lid material. Based on input from the vendor no immediate actions were required.

On October 9, 2013, when the 33 station battery was discovered to have a crack in the side of the cell jar extending below the high level line, an evaluation of the as-found condition concluded the battery was inoperable due to seismic qualification of the battery being compromised as a result of a crack in the jar that could potentially grow and allow electrolyte to escape from the battery. An immediate corrective action was preparation and installation of an emergency temporary modification to provide structural support which would prevent the crack from expanding.

An inspection of all safety related batteries determined that currently there are no other batteries that have cracks which extend into the cell jars. Cover cracks exist in the 23 and 24 batters and in other cover cracks in cells for battery 33 which are KCR-13 cells manufactured by C&D Technologies. Batteries 31 and 32 were replaced during the 3R16 refueling outage with new LCY-39 cells manufactured by C&D Technologies and are currently in satisfactory condition. Batteries 21 and 22 are model 2GN-17 cells manufactured by Enersys and were installed during refueling outage 2R18. They are currently in satisfactory condition with no cracks noted. Battery 34 is an Enersys model EA-11 battery and has no cracks noted in its cell covers. Weekly inspection procedures 3-PT-W013 (unit 3) and 2-PT-W010 (Unit 2) adhere to the inspection recommendations in IEEE Standard 450-1995 and will provide early identification of any cracks which have the potential to impact the cell jar.

Cause of Event

The direct cause of the crack in cell 14 was corrosion of the positive battery post seal area which caused the post to expand creating excessive strain on the PVC lid of the battery jar. Eventually this strain forces the lid to crack along the manufacturing knit line which is the weakest point of the lid. As the crack continues to expand it places excessive strain on the jar itself, due to the cover being expoxied to the jar. Corrosion of the positive post is due to contamination from the battery acid wicking into the post seal area. The wicking effect is caused by a manufacturing defect in the bond between the lead post insert and the rubber/EPDM bushing (ring) of the post seal, which allows acid to wick into the seal area and cause corrosion. The lead to the rubber/EPDM bushing interface was identified as a failure point due to the method of application of the adhesive coating used. The most probable cause was chemically induced degradation which weakened the jar wall allowing the stress being transferred from the cover crack to physically separate the jar.

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Corrective Actions

The following corrective actions have been or will be performed under Entergy's Corrective Action Program to address the cause and prevent recurrence:

- A new battery cell was installed to replace the existing battery 33 cell 14.
- A failure analysis is being performed by an independent vendor.

Event Analysis

The event is reportable under 10CFR50.73(a)(2)(i)(B). The licensee shall report any operation or condition which was prohibited by the plants TS. This condition meets the reporting criteria because the 33 battery was discovered with a cracked cell that rendered the battery inoperable due to the inability to meet its seismic qualification. The last time the battery was checked was on the previous weekly surveillance. The likely time the battery cell was inoperable was greater than the TS allowed completion time of two hours. Therefore, the battery cell cracked condition is a TS prohibited condition.

Past Similar Events

A review was performed of the past three years of Licensee Event Reports (LERs) for events reporting a TS violation due to inoperable battery. No LERs were identified.

Safety Significance

This event had no significant effect on the health and safety of the public. There were no actual safety consequences for the event because there were no accidents or events during the degraded condition. The 33 battery was declared inoperable due to the potential inability to meet its seismic qualification but it was available at all times to support the associated DC loads. An emergency temporary modification was installed to restore the battery cell to an operable condition.

There were no significant potential safety consequences of this event. The DC electrical power system is designed so that the loss of any train of DC electrical power subsystem does not prevent the minimum safety function from being performed. One battery charger is available to each battery so that the four batteries will always be at full charge in anticipation of a loss of AC power incident.

With one battery inoperable, the remaining batteries, battery chargers and EDS were operable and available to perform their safety function. In addition, battery charger 35 is an installed spare that can be used as the associated charger for any of the batteries. Also, failure to supply power to the vital instrument bus would cause the associated Static Inverter automatic static transfer switch to transfer to its alternate source of power. A loss of offsite power could result in stripping the power supply following a safety injection signal but they would be re-energized in accordance with plant procedures.